THE USE OF REAL-TIME MECHANICS TO INCREASE EMOTIONAL ENGAGEMENT AND IMMEDIACY IN INTERACTIVE FICTION

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It is remarkable to think that I began working on this degree nearly six years ago, even before the birth of two of my children. Because of this, I would be remiss for not dedicating this thesis to my amazingly loving and supportive wife, Julianna Samoff. She had to put up with a husband who was occupied too much with his own affairs to remember much of anything else. And, in turn, to my three children, Josiah, Clara, and Isaac, who lost too much time watching me work instead of play.

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ABSTRACT

The Use of Real-Time Mechanics to Increase

Emotional Engagement and Immediacy in Interactive Fiction

Timothy Samoff

August 2017

This thesis offers a study of the effects of a select set of real-time systems and mechanics and how they transform the player's experience while playing Interactive Fiction games. Ultimately, the study demonstrates that real-time mechanics increases emotional engagement and a sense of immediacy for the majority of players of Interactive Fiction games.

keywords: interactive fiction, real-time, game mechanics, emotions, immediacy

ARTIST STATEMENT

The first videogame that I ever beat was a text adventure game called, *Wishbringer* (Infocom 1985). And, in fact, it was this genre that first inspired me to want to become a professional videogame designer, something that I have been privileged to be for over twenty years now.

The text adventure game — more commonly known as Interactive Fiction (IF) — is one of the first defined videogame genres, now spanning more than 50 years. The fact that IF was once the most popular videogame genre (Barol 70) may serve to shape some understanding of how it has recently achieved a resurgence in popularity. IF was, and is, a genre that can stand on its own, which is quite telling for a genre that consists primarily of text, with no graphics or other supporting media.

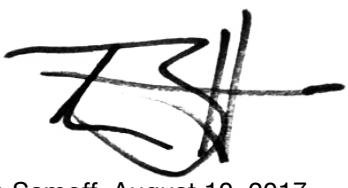
I began playing IF games in the early 1980s, when I was just in the third or fourth grade. By this time, IF games were already quite sophisticated, containing thousands of words, item inventories, ingenious puzzles, and engaging decision trees. During this time, other videogame genres were already incorporating graphics, audio, and new gameplay mechanics. It was because of the advancements in both technology and technique that the industry began to grow at an exponential rate, soon to become not just the enormous $108.9B global industry that it is today (McDonald), but one of the most beloved industries as well. Even so, I still found myself returning to games that only presented me with text and a select set of choices to make. No graphics. No audio. Pure intellect. And I wasn't the only one who felt this way.

One could liken the act of playing videogames — or, the actions and narratives found within videogames — with that of other forms of drama. That is, videogame players actively play a part in how

a game narrative unfolds. In her book, *Computers as Theatre*, Brenda Laurel posits that, "Dramatic potential refers to the set of actions that might occur in the course of a play, as seen from the perspective of any given point in time (that is, a location along the axis of time, as the action of the play unfolds)" (82). In this way, the narrative becomes the player's actions and vice versa. And because of this, time within gameplay is essential. Johan Huizinga's *magic circle* (1944), that is, the intrinsic metaphysical space in which games are played, supports this concept. It is this magic circle that forms a new *reality* in which players immerse themselves in play that requires them to become the actor.

In thinking back about my own love for videogames in general — and IF games specifically — the connection between games and drama is real. And time is always a factor: it takes time to play a game, time progresses within a game, and a game can unfold over the course its own game-time. However, aside from needing time to play through an IF game, that's where the notion of time has always ended for most games of this genre. This is true for the *classics*, developed back in the 1980s and 1990s, as well as games that were developed more recently. Why is this? Why hasn't IF evolved along with the other genres?

Time: the connection between actions and narrative. We game players — as the human race seems to inherently be (Huizinga 1) — understand that the magic circle does not stop time. Moreover, neither does game-time always end after leaving the magic circle. Consequently, could there be room for including real-time mechanics in IF? And, if so, will it increase the player's emotional engagement and sense of immediacy within their play? This is where lies my motivation to conduct this study.



Tim Samoff, August 10, 2017

INTRODUCTION

Interactive Fiction, also called text adventure games, has remained stilted by its own classic game mechanics, offering a turn-based experience and very little sense of emotional engagement or immediacy. By including more contemporary mechanics such as real-time and time-limited gameplay, Interactive Fiction may invoke a heightened sense of emotional engagement and immediacy from players as compared with traditional models.

The purpose of this thesis is to consider possible advancements to the Interactive Fiction genre, to consider the evolution of the genre, and to propose new design patterns and mechanics.

Through an in-depth study of both historical and current Interactive Fiction design and development techniques, as well as a foray into practical examples of mechanics that have never been used in the genre, this thesis will prove that there is still room to grow within the genre.

By investigating which mechanics helped to make Interactive Fiction an immersive and engaging game genre and experimenting with a select set real-time and time-limited mechanics, this study will offer game designers and developers new ways to use Interactive Fiction both as a standalone method for game development as well as a tool that can be used within other game genres.

Most importantly, this study will prove the importance of including real-time systems and mechanics in Interactive Fiction; that this new mode within the IF genre will indeed heighten players' emotional response and sense of immediacy during gameplay.

Basis For Study

IF is an important and revered genre in the history of videogames, both as an artifact of study as well as a venue for creative, artful, and nuanced game design and development. This is true even in today's more media-saturated videogame landscape, where several recent Interactive Fiction games have gained notoriety and/or popularity.

Still, the genre, for the most part, has remained lodged in a state of turn-based mechanics (i.e., they are typically games in which a pre-programmed set of instructions awaits the player's response) since the genre was conceived. In fact, a common acronym often applied to most Interactive Fiction is CYOA, or Choose Your Own Adventure, harkening back to the short-fiction book genre of the same name. But what if, just like other videogame genres, Interactive Fiction continued to function apart from a player's own responses? What if, like other videogame genres, the game made real-time moves while the player was still considering their next action? What if every second of real time in an IF game mattered, with no pause, stop, or reset, until a solution was discovered?

This thesis offers a study of the effects of a select set of real-time systems and mechanics and how they transform the player's experience while playing Interactive Fiction games. In conclusion, the study ascertains that real-time mechanics do increase emotional engagement and a sense of immediacy for the majority of IF game players.

THEN & NOW

While *ELIZA* (1964 – 1966) and *SHRDLU* (1966 – 1970) are reported as the earliest examples of Interactive Fiction, the first game to achieve recognition was the 1975 release of *Adventure,* by Will Crowther (Jerz, Colossal Cave Adventure). *Adventure*, (later renamed, *Colossal Cave Adventure*) was a text adventure game set in an underground cave environment. In *Adventure*, players were required to type short, one- to two-word commands in which the game would respond in turn (see Figure 1). The game ended up spreading across the ARPAnet, inspiring many aspiring computer programmers to develop similar games.

```
.run adven


WELCOME TO ADVENTURE!!  WOULD YOU LIKE INSTRUCTIONS?

yes

SOMEWHERE NEARBY IS COLOSSAL CAVE, WHERE OTHERS HAVE FOUND FORTUNES IN
TREASURE AND GOLD, THOUGH IT IS RUMORED THAT SOME WHO ENTER ARE NEVER
SEEN AGAIN.  MAGIC IS SAID TO WORK IN THE CAVE.  I WILL BE YOUR EYES
AND HANDS.  DIRECT ME WITH COMMANDS OF 1 OR 2 WORDS.  I SHOULD WARN
YOU THAT I LOOK AT ONLY THE FIRST FIVE LETTERS OF EACH WORD, SO YOU'LL
HAVE TO ENTER "NORTHEAST" AS "NE" TO DISTINGUISH IT FROM "NORTH".
(SHOULD YOU GET STUCK, TYPE "HELP" FOR SOME GENERAL HINTS.  FOR INFOR-
MATION ON HOW TO END YOUR ADVENTURE, ETC., TYPE "INFO".)
                              - - -
THIS PROGRAM WAS ORIGINALLY DEVELOPED BY WILLIE CROWTHER.  MOST OF THE
FEATURES OF THE CURRENT PROGRAM WERE ADDED BY DON WOODS (DON @ SU-AI).
CONTACT DON IF YOU HAVE ANY QUESTIONS, COMMENTS, ETC.

YOU ARE STANDING AT THE END OF A ROAD BEFORE A SMALL BRICK BUILDING.
AROUND YOU IS A FOREST.  A SMALL STREAM FLOWS OUT OF THE BUILDING AND
DOWN A GULLY.

east

YOU ARE INSIDE A BUILDING, A WELL HOUSE FOR A LARGE SPRING.

THERE ARE SOME KEYS ON THE GROUND HERE.

THERE IS A SHINY BRASS LAMP NEARBY.

THERE IS FOOD HERE.
```

Figure 1. Gameplay from the original *Adventure* (Crowther)

Interactive Fiction went on to gain wide popularity in the 1980s with companies such as Adventure International, CE Software, Infocom, and others releasing games like *Adventureland* (Adventure International 1978), *SwordThrust* (CE Software 1981), the *Zork* series (Infocom 1977 – 1982; see

Figure 2), *The Hitchhiker's Guide to the Galaxy* (Infocom 1984 - 1987), *Leather Goddess of Phobos* (Infocom 1986 - 1988), et cetera. In fact, these games were instrumental in the commercial success of both computer games in general, and personal computers (GET LAMP 00:21:14 - 00:21:29). Even so, at the beginning of the 1990s, Interactive Fiction (and many of its corresponding subgenres) failed to garner continued success. This was largely due to the influx of higher-end computers, computer graphics-based games, and the Internet (Firth).

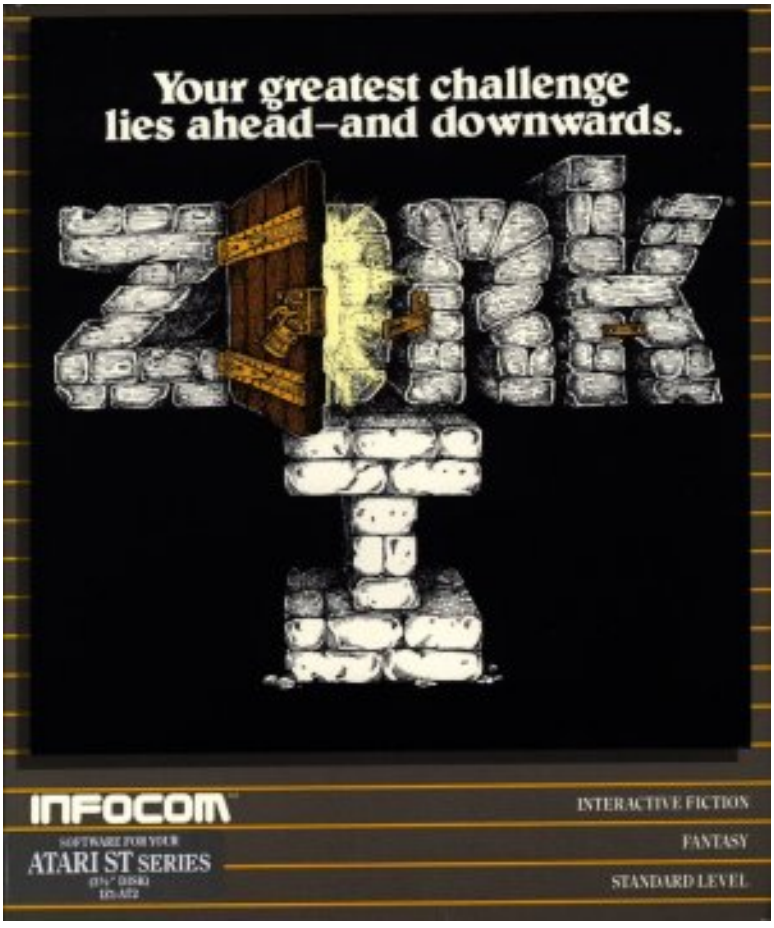


Figure 2. *Zork I* cover art (Infocom)

In the 1990s, Interactive Fiction continued to be developed. These games were often developed with the inclusion of graphics and sound, which led way to a new genre known as Visual Novels (Wikipedia). While IF never regained the popularity that it had once achieved, companies such as Infocom re-

released several volumes of their early work as either commercial bundles or for free. Similarly, with the boom of Riot Grrrl (Wikipedia) and punk zine publication in the 1990s (Wikipedia), there remained a strain of seemingly non-game forays into IF, such as *e-lit* and *interactive novels* like *Victory Garden* (Eastgate Systems 1992) and *Patchwork Girl* (Eastgate Systems 1995). Alas, even this type of literary interactive fiction suffered a decline due to the increased accessibility of inexpensive personal computers.

With the advent of the indie game development scene in the 2000s, Interactive Fiction began to once more gain traction among fans of the genre, gamers, and game designers alike. Several legacy computer programs have been maintained and new applications have been developed in order to facilitate the creation of IF games. Among them are Inform, TADS (Text Adventure Development System), Twine, inklewriter, and Fungus (a plugin for the popular game engine, Unity 3D).

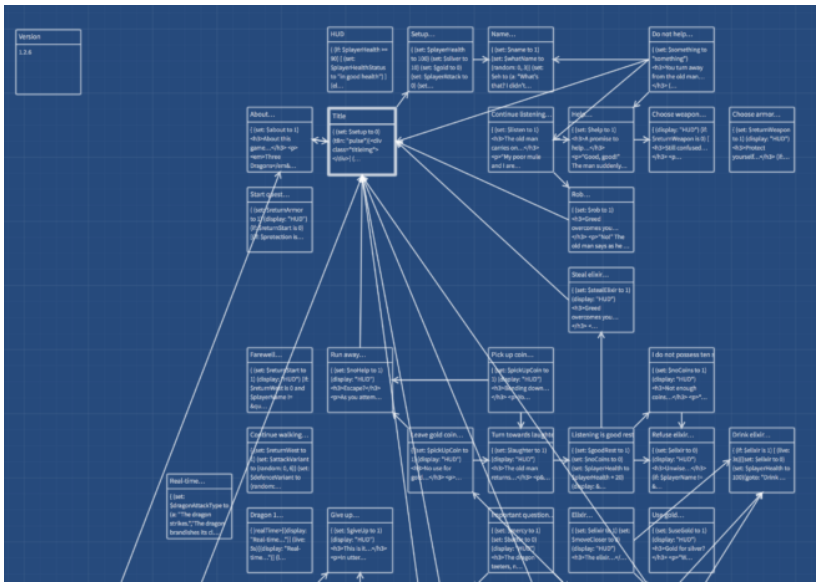


Figure 3. Twine's node-based "Story Editor" (Klimas)

In 2012, Activision, Inc., re-released the 1991 collection called *Lost Treasures of Infocom*, a collection of nearly 30 Infocom games ranging from *Border Zone* and *Planetfall* to *Wishbringer* and *Zork* for Apple iOS (Apple Inc. iTunes App Store). During the 2013 IndieCade Festival, an annual independent games festival and conference, the featured seminars on Interactive Fiction, narrative in games, and development tools like Twine (see Figure 3) made it clear that Interactive Fiction was on the rise (IndieCade). In fact, one of the presenters at the 2013 IndieCade Festival, Porpentine Charity Heartscape (a.k.a Porpentine), was already becoming notable for releasing several award-winning IF games developed using Twine (although these games were still in the vein of traditional IF game mechanics and literary fare).

In 2014, the acclaimed company Inkle (creators of the Interactive Fiction tool, inklewriter) released the game *80 Days*, based on the Jules Verne novel, *Around the World in Eighty Days* (see Figure 4). It was since named TIME's 2014 Game of the Year (Peckham), among many other accolades.



Figure 4. Gameplay in *80 Days* (Inkle)

In the game, players experience lush graphics and sound, while still playing through a classic set of Interactive Fiction mechanics. But unlike some of *80 Days*' predecessors, a few innovative constructs were introduced. For instance, a typical play-through of the game will typically only reveal 2% of the game's 750,000 words. There are also plenty of Easter Eggs and hidden endings in the game that only a reported eight players have ever found. Likewise, the game experience will vary from player to player depending on the items that are gained and the choices that are made (IGN).

Most importantly, *80 Days* introduced a quasi-real-time mechanic in which players must complete the game within eighty days after beginning their journey. This mechanic is similar to some earlier games like *Breakers* (Synapse Software Corporation/Brøderbund Software Inc. 1986) and *Border Zone* (Infocom 1987) in which the game continues to progress even if the player has not input any commands.

The *real-time* aspect of these games is far from real-time, though. In these cases, where time is a factor, the time is only an in-game construct in which a day may only be a few minutes of actual gameplay. Similarly, in contemporary games such as *80 Days*, *A Dark Room* (Double Speak Games 2013), and *Cat Simulator 3000* (Emma Winston 2015) time runs while in-play, but it stops as soon as the game is exited.

The *Lifeline* series, by 3 Minute Games, is another introduction into contemporary Interactive Fiction. The original *Lifeline* game, released in 2015, and correspondingly determined one of the highest-grossing iOS games in 2015 (Big Fish), used mobile platform technology to its benefit by introducing

an interesting notification mechanic in which the in-game counterpart would notify players even when the game was closed in order to get them to come back and play. This mechanic has since been coined *real-time delay* (see Figure 5).



Figure 5. Example of real-time delay mechanic in *Lifeline* (3 Minute Games)

When asked why the *Lifeline* development team chose to utilize real-time delays rather than create a game that was actually played in real-time, former Lead Game Designer at 3 Minute Games, Mars Jokela, stated:

> *We knew that people have busy lives and we would be sending them notifications throughout their day. It was important to us that you wouldn't miss out on important story moments, or feel undue pressure to pay close attention and respond while you happened to be in the middle of something else (like a movie, or sleeping, or moving traffic). So, we considered adding time pressure moments but ultimately opted against it*

> *so players could take control of their half of the game. Similarly, IF games that have time pressure but only while you have the game open allow the player to take control of the pacing and fit the game into their lives where it makes most sense.*
>
> *"I do think it's an idea worth exploring but there were some open design questions that we didn't have great answers for yet. (2017)*

Other IF-inspired games have come close to a more real-time approach (e.g., Davey Wreden's *The Stanley Parable* and *The Beginner's Guide*), but these games also rely on a certain amount of non-text-based approaches, like first-person controls, graphics, animation, etc. In this way, these games may be thought of more like other videogame genres and not necessarily true Interactive Fiction.

While Interactive Fiction continues to be developed, it also gains more and more fans. But the core mechanics of the games are still set in a *read-and-respond* pattern, relating little to other game genres in which playing in real-time is an integral part of the gaming experience.

THE IMPORTANCE OF REAL-TIME GAMEPLAY

To understand the idea of real-time in games, one must first contemplate the notion of a *move*.

> *A move within a game is an abstraction over player action, mapping action to a specific significance within the rule set and independent of local, personal and idiosyncratic variations in performance; a move is a connotation of a physical action allowed and facilitated by the semantic framing of the game (I can move a chess piece on the board at any time, but I only make a move in the game of chess when I'm playing the game, and then I am limited to a very small set of choices of how to legally move different pieces). Hence a player performs actions having conventional connotations as moves within the formal system of the game. Those actions are likely to be highly stylised according to the game, and actions too dissimilar to the stylised set will be regarded as fouls or cheats if their performer intends them to have in-game significance, or as extra-ludic actions potentially frustrating other players if they are not intended to have in-game significance. (Lindley)*

Considering how a player *moves*, or otherwise translates their position or progress within the gameplay, then brings up the issue of time (for a *move* cannot be made if time does not advance). Because of this, the passage of time in gameplay important. And in terms of determining how moves are made during gameplay, real-time systems can (and often do) heighten players' emotional engagement and sense of immediacy during gameplay. According to Chris Crawford (notable game designer, author, and originator of the Game Developers Conference), this is without a doubt an intrinsic element that generates interest:

> *Some media for representing reality are static. A painting or sculpture depicts a snapshot of reality frozen in time. Some media are dynamic; they show change with time. Movies, music, and dance are dynamic in this way. They are able to represent the changing aspect of reality more richly. But the most fascinating thing about reality is not that it is, or even that it changes, but how it changes, the intricate webwork of cause and effect by which all things are tied together. The only way to properly represent this webwork is to allow the audience to explore its nooks and crannies to let them generate causes and observe effects. Thus, the highest and most complete form of representation is interactive representation. Games provide this interactive element, and it is a crucial factor in their appeal. (Crawford 9-10)*

Dune II: The Building of a Dynasty (Westwood Studios 1992) is said to be the first modern real-time strategy game (RTS) ever released (Loguidice and Barton 65). While plenty of turn-based strategy games (TBS) preceded it, *Dune II* afforded the first time players had to make split decisions and hone their hand-eye coordination in order to keep up with the game's real-time responses.

Is real-time important in videogames? According to Loguidice and Barton, in their book *Vintage Games: an Insider Look at the History of Grand Theft Auto, Super Mario, and the Most Influential Games of All Time*, the inclusion of real-time in strategy games is a central motivating factor:

> *For many gamers, the constant action and immediate responses of RTS games are more appealing and easier than planning one or more moves a turn and then waiting for the results to be calculated and displayed, as in TBS.*
>
> *Although the top TBS games add slick and logical interfaces, automate the complex statistical calculations automatically behind the scenes, and may even feature impressive audiovisual elements, there is nothing inherent in such a game that can't be done between two or more dedicated players sitting at a table with a well-designed board game. (67)*

In a sense, the turn-based functionality of an IF game often presents as even less game-like than a board game, but rather comes across as a book with a limited set of alternate paths (a la Choose Your Own Adventure books). Because of this, the investigation into whether real-time mechanic may advance the genre is quite valid. That is, IF may be able to provide players with *immediate responses* similar to those found in other real-time genres.

Following are the accounts of two prototypes, created by the author of this paper, in which several people were recruited as playtesters and asked to provide reports of their experiences. The prototypes

explore possibilities that have otherwise been left untapped in the world of IF: real-time combat systems and time-limited gameplay.

PROTOTYPE 1:
TURN-BASED VS. REAL-TIME COMBAT SYSTEM

PROTOTYPE 1: INTRODUCTION

Few IF games present the player with real-time events within the course of gameplay. Typically, actions are turn-based, even when faced with a combat situation. One text-based game that utilizes real-time combat quite well is *A Dark Room* (Double Speak Games 2013). During combat, players are given countdown timers for each of the weapons that they possess, during which time, the attacker continues its actions, regardless of player response (see Figure 6).

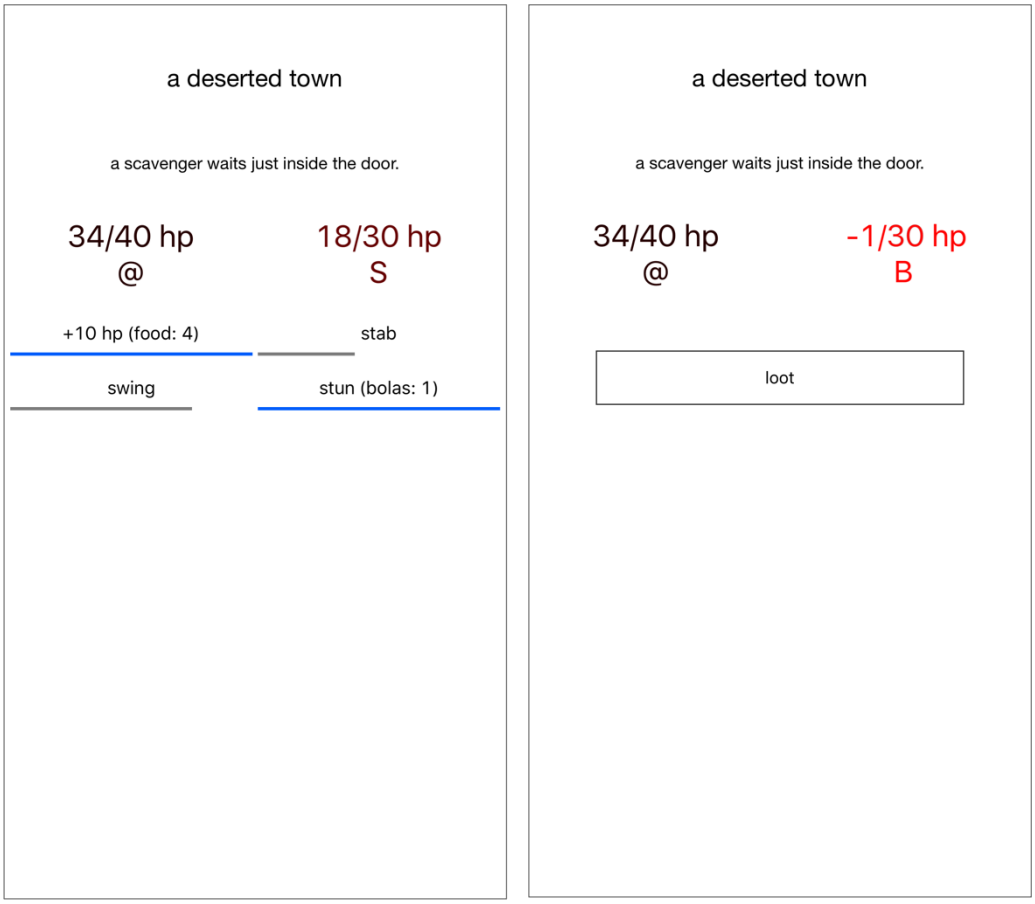


Figure 6. Examples of real-time combat in *A Dark Room* (Double Speak Games)

But while *A Dark Room* is a text-based game, it is difficult to categorize it as a purely IF-styled game. This is because the game provides very little in the way of actual narrative, as well as an ASCII-

generated, navigable map of the *overworld* (Wikipedia), which is not typically something a player would find in traditional IF (see Figure 7).

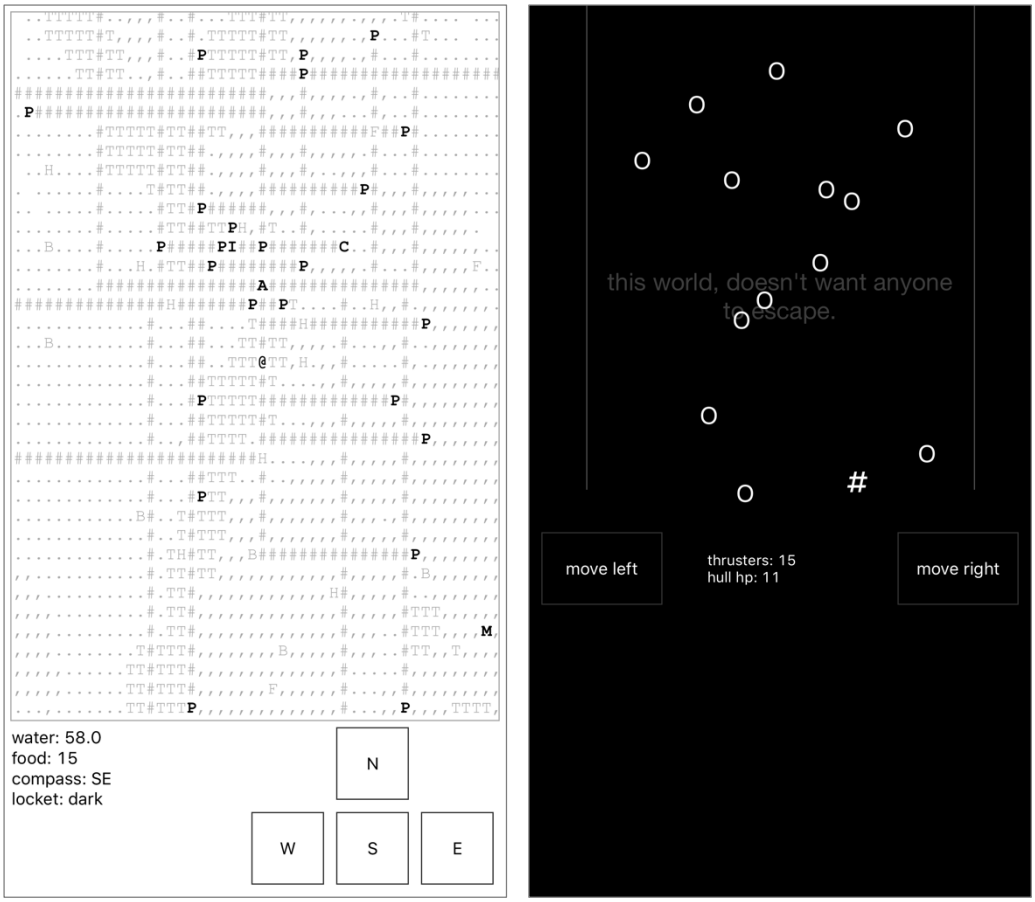


Figure 7. Examples of the navigable overworlds in *A Dark Room* (Double Speak Games)

This implementation is a lot more like what players might expect from a Multi-User Dungeon, or MUD (Bartle 9-10).

In lieu of the fact that there are little to no practical examples of real-time mechanics in Interactive Fiction games (especially in the commercial realm), a specific test-case had to be created. The development, analysis, and results of this test follow.

Prototype 1: Overview

In order to test how players responded to a real-time combat system in IF, the author devised two playable prototypes: one that presented a typical turn-based combat system and another that took the same system and made it real-time. The prototypes were designed in a style similar to many contemporary IF games such as the *Lifeline* series, *The Martian* (Little Labs Inc 2015), *80 Days*, and *City of Love: Paris* (Ubisoft Entertainment 2017), in which the game interface provides a readout of in-game narrative with a selection of preset choices to choose from (see Figures 8 – 10). According to Mars Jokela (Game Designer on the *Lifeline* series), "Overall this is a lot like what we would consider a playable prototype for a combat system... Something you'd use to work out your timing and mechanics... (2017)."

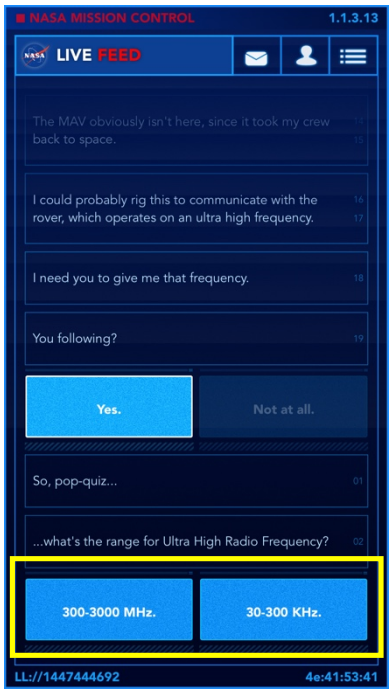


Figure 8. *The Martian* (Little Labs Inc)



Figure 9. *80 Days* (Inkle)



Figure 10. *City of Love: Paris* (Ubisoft Entertainment)

Figures 8 – 10. Examples of preset player choices in contemporary IF

When the playtest began, the test subjects were provided with simple instructions about how to proceed (see Figure 11).

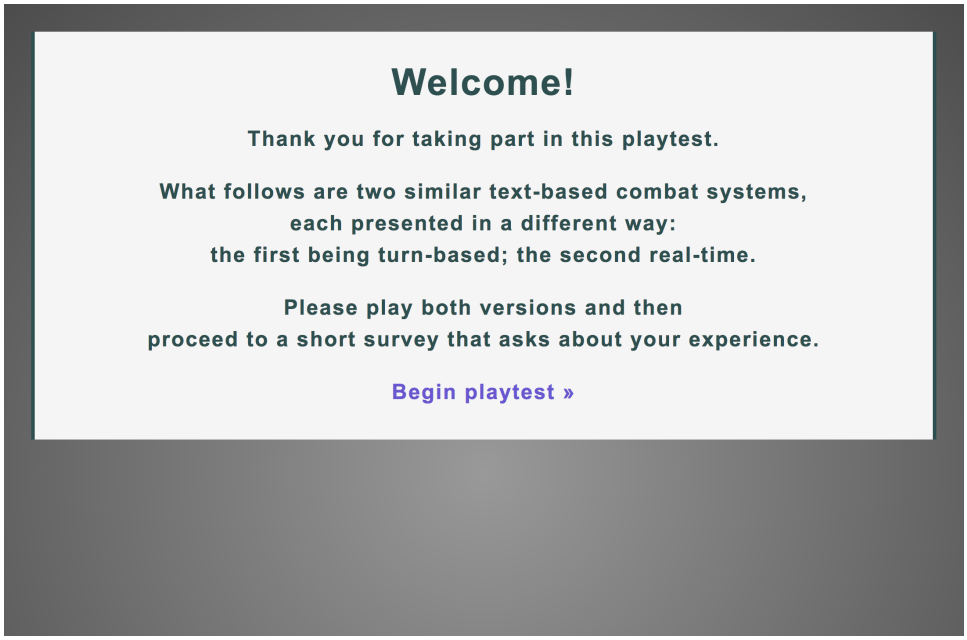


Figure 11. *Prototype 1* welcome screen

Turn-Based Combat System Mechanic

The *welcome* screen led to a very short narrative introduction in order to provide players with minimal gameplay context and meaning (that they were being attacked by a nondescript beast) before placing them in the midst of the actual combat system.

As shown in Figure 12, selecting the "Fight" button began the combat…

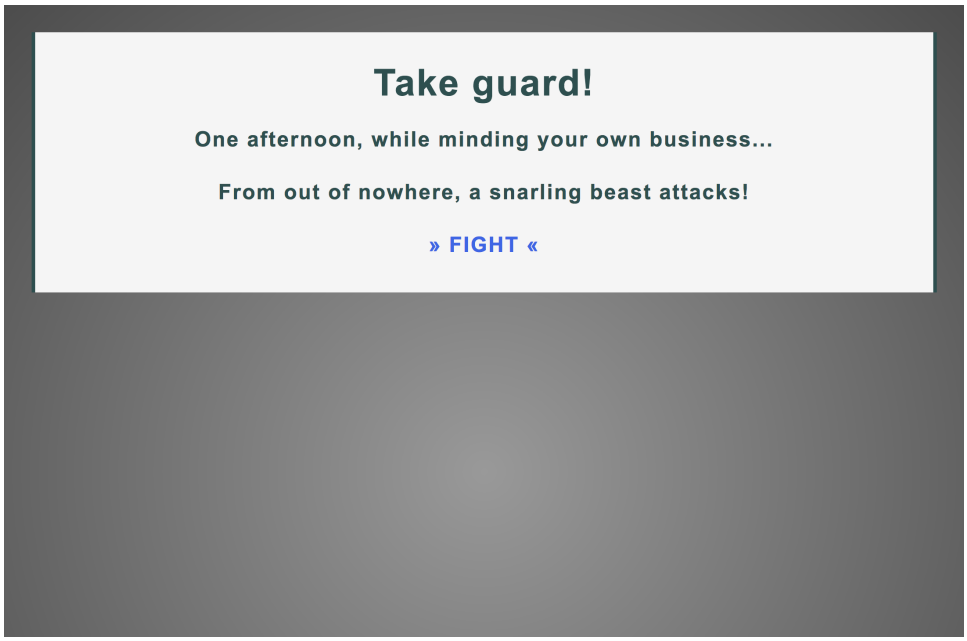


Figure 12. *Prototype 1* turn-based combat context

The turn-based combat system was devised to act similarly to how most turn-based systems work. Players may make a choice (or move) and then must wait for the game to respond. In this case, the following conditions were used to construct the system.

Table 1. Prototype 1 Turn-Based Player Stats

Punch	Kick	Dodge	Rest
• Always available	• Available every other turn	• Always available	• 30% chance for availability after a hit or kick • Always available after a successful dodge
• 33% chance of miss (0) • 33% chance of light hit (1) • 33% chance of solid hit (2)	• 17% chance of miss (0) • 33% chance of light kick (1, 2) • 33% chance of medium kick (3, 4) • 17% chance of hard kick (5)	• 30% of failed dodge • 70% chance of successful dodge	• Increase player health by 5, up to cap (25)

Table 2. Prototype 1 Turn-Based Enemy Stats

Enemy Attacks — Once Per Player Turn
• 17% chance of miss (0) • 25% chance of light attack (1, 2, 3) • 25% chance of medium attack (4, 5, 6) • 33% chance of heavy attack (7, 8, 9, 10)

In order to play the prototype, players had access to buttons that corresponded with their moves (see Figure 13). The moves were available based on the percentages listed above, or whether or not certain moves were used.



Figure 13. *Prototype 1* turn-based combat screen

At the end of the combat, players were prompted to either try the test again or move on to the next test.

Real-Time Combat System Mechanic

Once again, players were provided with nominal context and then told to fight (see Figure 14).

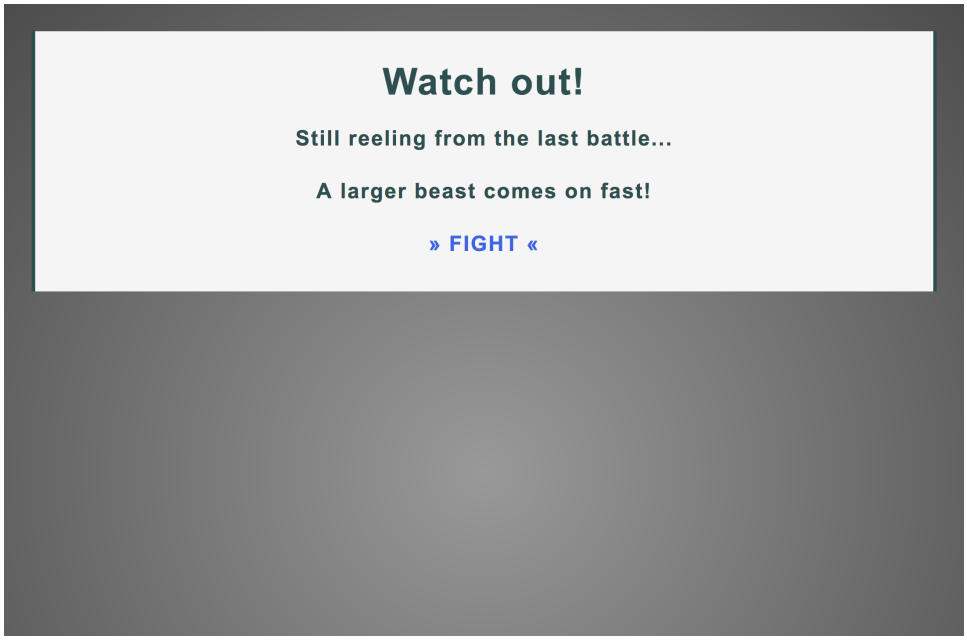


Figure 14. *Prototype 1* real-time combat context

The real-time combat system provided players with the same moves as the turn-based system, although the game would continue playing regardless of player response. In other words, if a player did not respond at all, the *enemy* would continue to attack until the player's hit points reached zero.

During play, players were presented with a real-time indicator that presented how much time they had before the enemy would attack again (see Figure 15). The indicator would change from red to blue as it counted down.



Figure 15. *Prototype 1* real-time combat count-down

Table 3. Prototype 1 Real-Time Player Stats

Punch	Kick	Dodge	Rest
• Available every 0.5-seconds	• Available every 3-seconds	• Available every 1-second	• Available every 8-seconds
• 33% chance of miss (0) • 33% chance of light hit (1) • 33% chance of solid hit (2)	• 17% chance of miss (0) • 33% chance of light kick (1, 2) • 33% chance of medium kick (3, 4) • 17% chance of hard kick (5)	• 50% of failed dodge • 50% chance of successful dodge	• Increase player health by 5, up to cap (25)

Table 4. Prototype 1 Real-Time Enemy Stats

Enemy Attacks — Every 3-Seconds
• 17% chance of miss (0) • 25% chance of light attack (1, 2, 3) • 25% chance of medium attack (4, 5, 6) • 33% chance of heavy attack (7, 8, 9, 10)

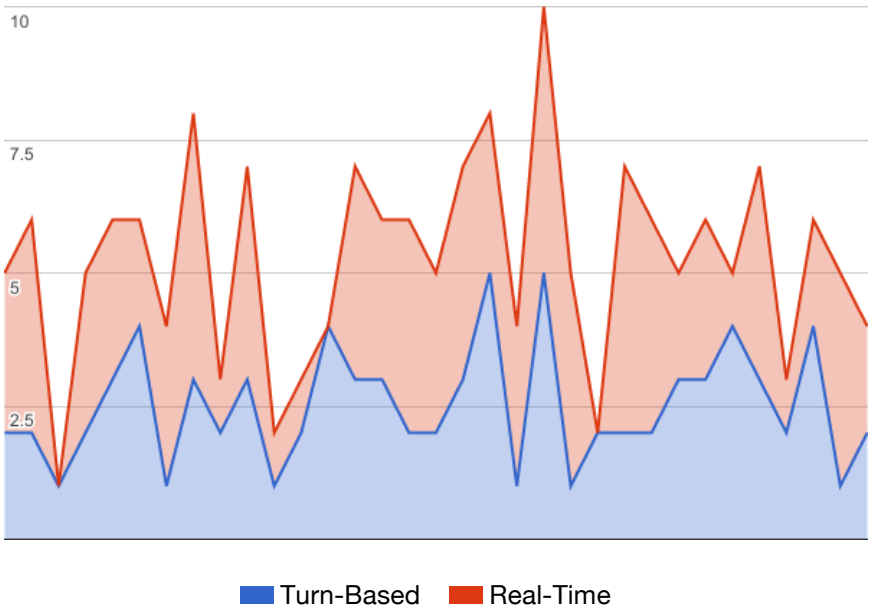
At the end of the combat, players were prompted to either try the test again or take the survey.

Prototype 1: Playtest Results

A playtest of 33 people ranging from the ages of 11 to 41 years old was conducted in order to gain a wide variety of views. Of these 33 test subjects, nearly 85% had played Interactive Fiction games prior to this playtest. Of those 26 people, 57% had experienced combat systems in IF games before, and the majority rated IF combat systems as an average (2 to 3 out of 5) to a slightly above average (4 out of 5) experience.

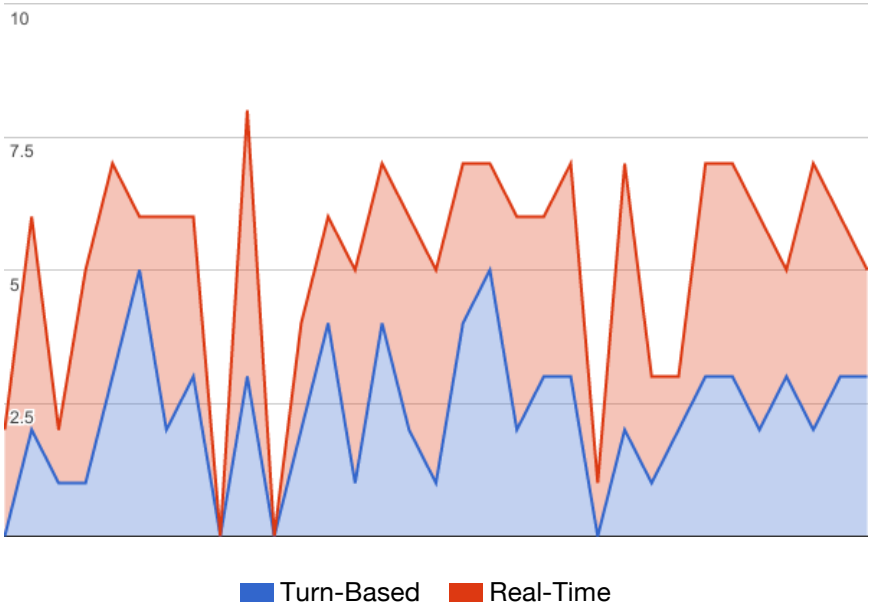
Next are the playtest results concerning general enjoyment, emotional engagement, and immediacy while playing the two systems.

Table 5. Rate your general enjoyment while playing the turn-based combat system vs. the real-time combat system.



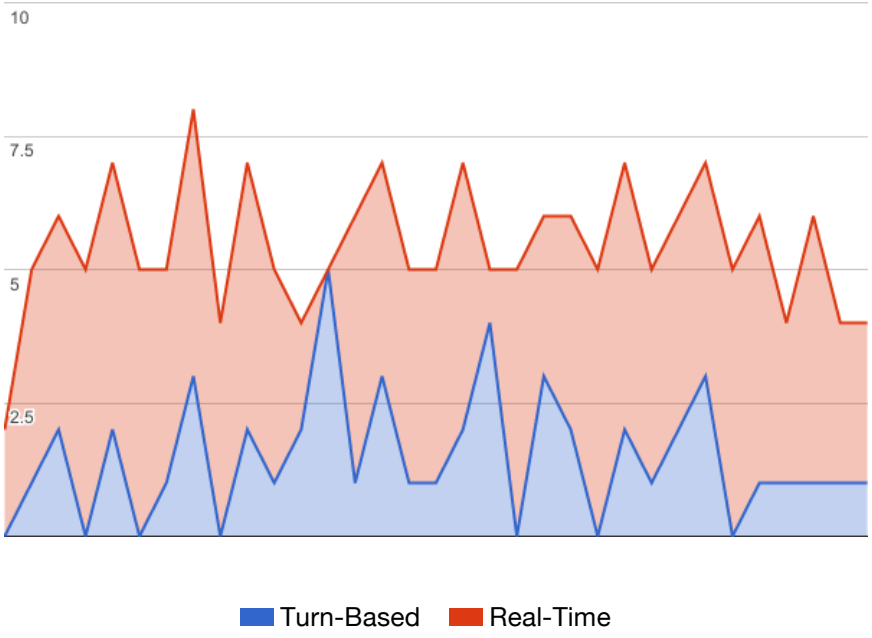
While there were some overlaps in the notion of *enjoyment*, the real-time system clearly evoked higher results than the turn-based system.

Table 6. Rate the amount of emotional engagement that you felt while playing the real-time combat system vs. the turn-based combat system.



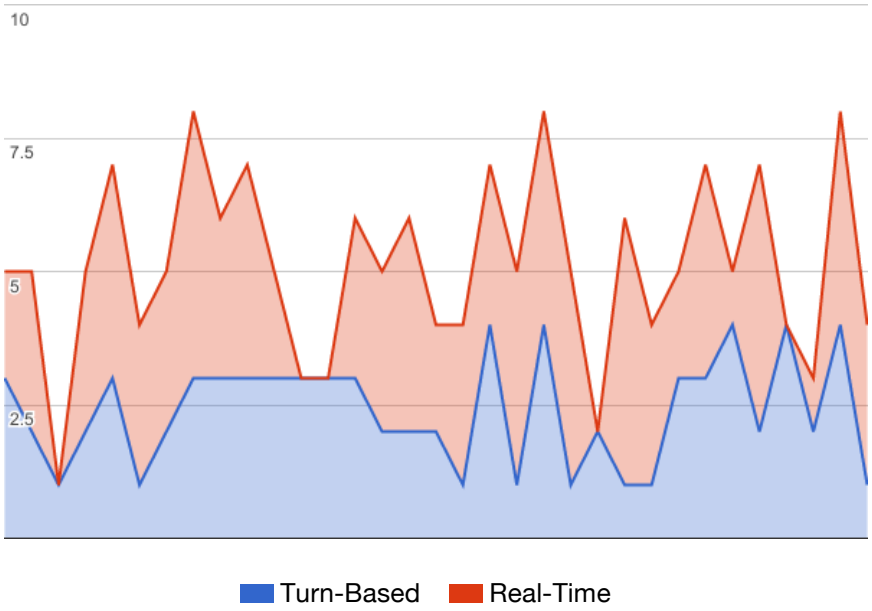
Because *emotional engagement* can be difficult to codify, these results display responses without further context. Again, the real-time system engaged players emotionally more than the turn-based system.

Table 7. Rate the amount of immediacy that you felt while playing the turn-based combat system vs. the real-time combat system.



More so than the other questions, Table 7 shows a stark difference between playing a turn-based system as opposed to the real-time system.

Table 8. What was your sense of frustration or fun when playing the turn-based combat system vs. the real-time combat system?



The players were then asked whether or not the two systems were frustrating or fun. Again, there was some overlap, although the real-time system appears to be more fun across the board.

Even so, the answers to a final question concerning which style of combat system players would most like to play within an IF game were nearly evenly split, at 51.5% for real-time and 48.5% for turn-based. This could be for a number of reasons ranging from the player's comfort zone, an opinion of whether IF should be presented in its purest form, their desire to play games of this genre in a more relaxed state, or otherwise. Further research is necessitated in this case in order to understand these responses more adequately.

Ultimately, as demonstrated in the preceding tables, the real-time combat system not only evoked greater general enjoyment, but also emotional engagement and a sense of immediacy.

As a concluding note concerning this study, one playtester responded this way after playing *Prototype 1*:

> *Usually I like turn-based combat better, but I liked the real-time one better here. It felt a little like playing* Sorcery! *from Steve Jackson Games — but maybe just because the combat system is very, very simple. I like the simplicity...and how intuitive the real-time system becomes after just a few rounds. I think I did more damage to the enemy in the real-time combat, too. (Twine Forum)*

PROTOTYPE 2:
TIME-LIMITED GAMEPLAY

PROTOTYPE 2: INTRODUCTION

> *The experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content. We refer to this experience as immersion. Immersion is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus. [...] [I]n a participatory medium, immersion implies learning to swim, to do the things that the new environment makes possible [...] the enjoyment of immersion as a participatory activity. (Murray 98-99)*

Aside from good writing and a player's imagination, the Interactive Fiction genre provides little more in the way of what a gamer might consider a *participatory activity* or, *true agency* — that is, the ability to affect the world and story (Short) — and *immersion* — or explicitly, the suspension of disbelief (Wikipedia). This particular flaw is made apparent by the lack of immediacy in most IF gameplay. Because of this, most IF games become a series of step-by-step meaningless choices that only progress — or move — a player through a preset series of canned choices and consequences, disallowing the player to make many mistakes while playing.

Only a few games, including the aforementioned *80 Days*, *Breakers*, and *Border Zone*, have attempted to address this issue with time-limited events in-game. Even so, they achieved this particular mechanic only when the game session is active. In other words, players can remove themselves from the magic circle just by pausing or exiting from the game. In fact, as outlined in Figure 16, the instructions screen for *Border Zone* — a game made famous by it's so-called in-game time-limit — explains, "If at any time you need to 'pause' the game and cause the real-time clock to stop running..." In doing this, the game

allows players to take their own time — outside of the time limits imposed by the game — in order to solve puzzles, determine where to go or what to do next, and so on.

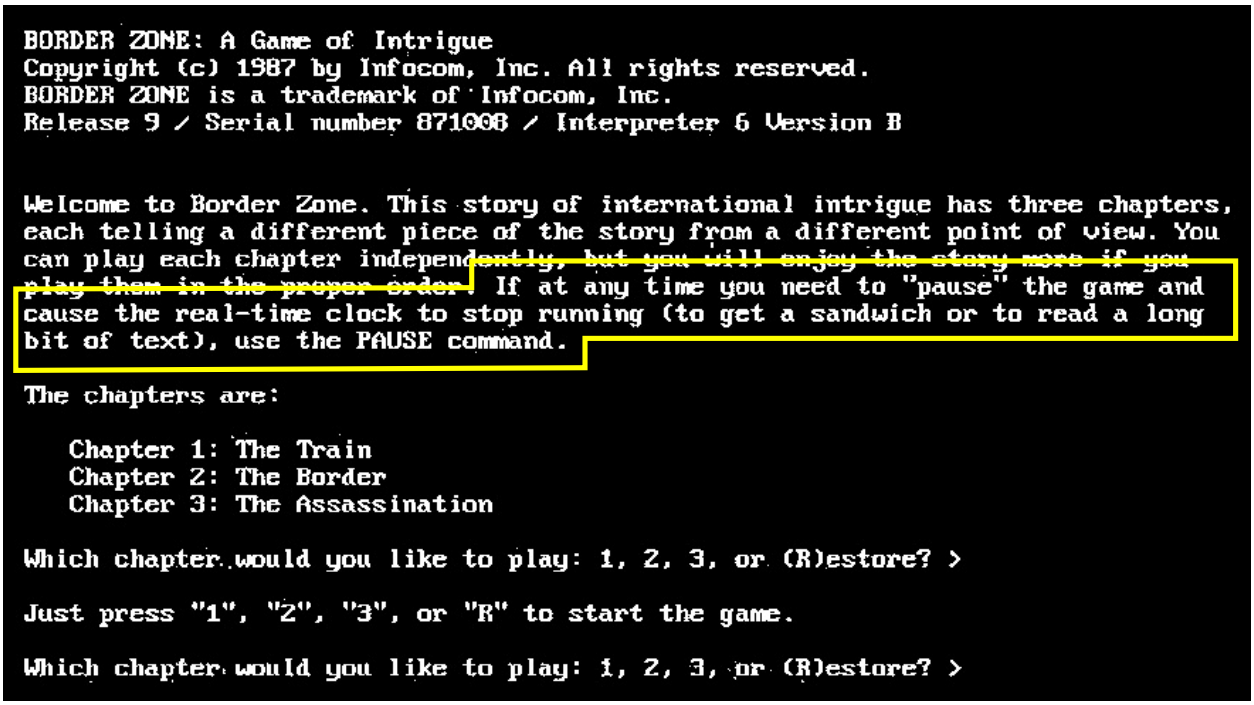


Figure 16. *Border Zone* instructions screen (Infocom)

As with *Prototype 1*, a lack of available IF games with a persistent, time-limited mechanic required the development of a unique test-case for this study.

Prototype 2: Overview

The author developed *Prototype 2* to include a persistent timer. That is, there is no way to pause or stop the timer. Therefore, if a player quits the game, the timer continues to run. When the game is resumed, the timer will either continue running from the current time in relation to when the game was started or be concluded, thus resulting in a *fail* state for the player. In this way, the system creates a much more realistic take on the idea of time-limitation and, consequently, fundamentally increases the amount of immediacy that players feel during play.

This prototype was also designed similarly to more *classic* IF games such as *Zork*, *Wishbringer*, and others. That is, instead of choosing from preset choices (as in *Prototype 1*), players were provided with an interface that awaited typed commands (see Figure 17). If players needed assistance, all of the commands were made available by entering "help" into the interface.

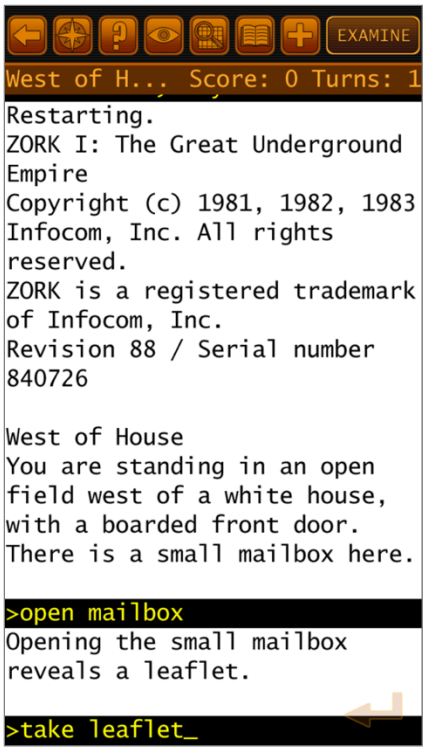


Figure 17. *Zork I* text-entry interface from *The Lost Treasures of Infocom* (Activision)

Similar to *Prototype 1* (Turn-Based vs. Real-Time Combat System), *Prototype 2* provided test subjects with a short, but descriptive introduction that setup the context of the game (see Figure 18).

> *You are a black hat who is part of a loose-knit, international network of other like-minded hackers attempting to breach various government agencies. Five days ago, you received an anonymous SMS on your burner from someone who was able to successfully infiltrate HMLabs, a top secret national military think tank.*
>
> *During the assault on the HMLabs system, this person came across some incrementing evidence that would expose the organization's attempts to create a chemical weapon that could ultimately be unleashed on humanity — a colorless, odorless gas that would turn the recipients into mindless puppets. Further investigation also unearthed a database containing everyone who has been involved in the experiments.*
>
> *According to the anonymous hacker, the system performs an automatic backup process every **15-minutes**, in which all users are disconnected. Additionally, all activity in the system is logged, including all access point data.*
>
> *The hacker has only accessed the HMLabs system twice now, for fear of being traced. Upon the second visit — three days ago — the person found that all evidence of the chemical weapon had been moved or deleted.*
>
> *Today, you received another anonymous SMS stating:*
>
> > *"the data is still there somewhere. but i found an exploit. delete the encrypted file and bring down the whole system. exit to avoid the dragon -- don't get logged."*
>
> *Do you trust the anonymous messages, or ignore them as a hoax?*

After reading the introduction, players are then prompted to begin the game by selecting an "Access HMLabs" button (See Figure 18. *Prototype 2* introduction screens).

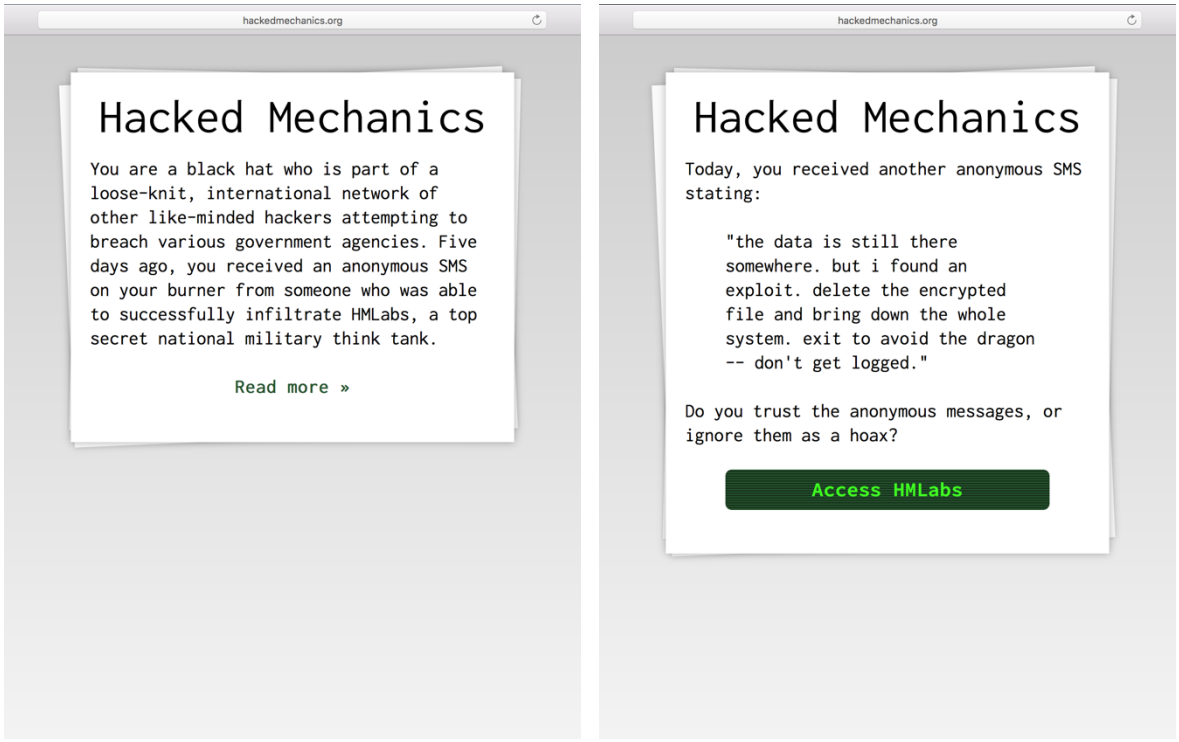


Figure 18. *Prototype 2* introduction screens

Time-Limited Gameplay Mechanic

The first step in creating this new system of play was to devise a flow in which players would be provided with an indication of how much time they had, as well as all of the tools that were required to complete the game (see Figure 19).

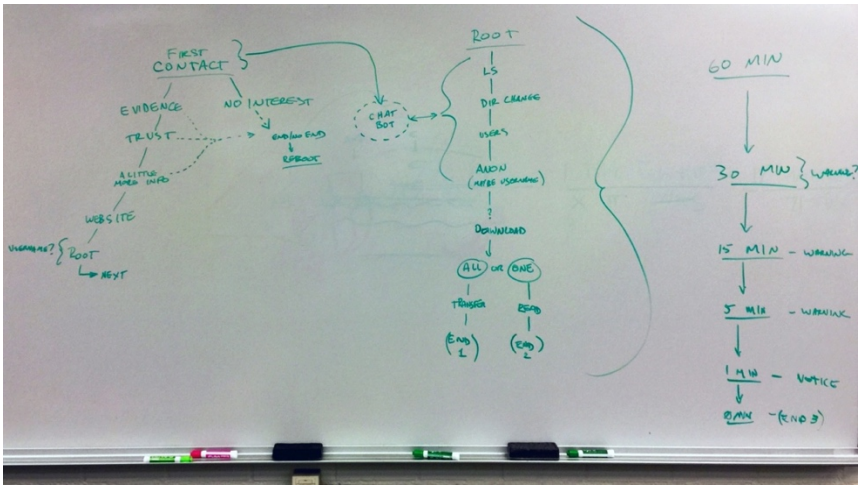


Figure 19. *Prototype 2* time-limited game flow

It was determined that a simple set of options was required to present a game that was both moderately challenging — especially to players that had never encountered the mechanics before — yet beatable through only one or two playthroughs.

The game itself is a riff on classic hacker-oriented films such as *Wargames* (1983), *Sneakers* (1992), *Hackers* (1995), and so on. In it, players are presented with a UNIX-style interface in which they must use the information provided within the game's introduction, as well as that which they find within the game, in order to solve the puzzle (see Figure 20). Of course, as stated in the introduction, they only have 15 minutes to do so.

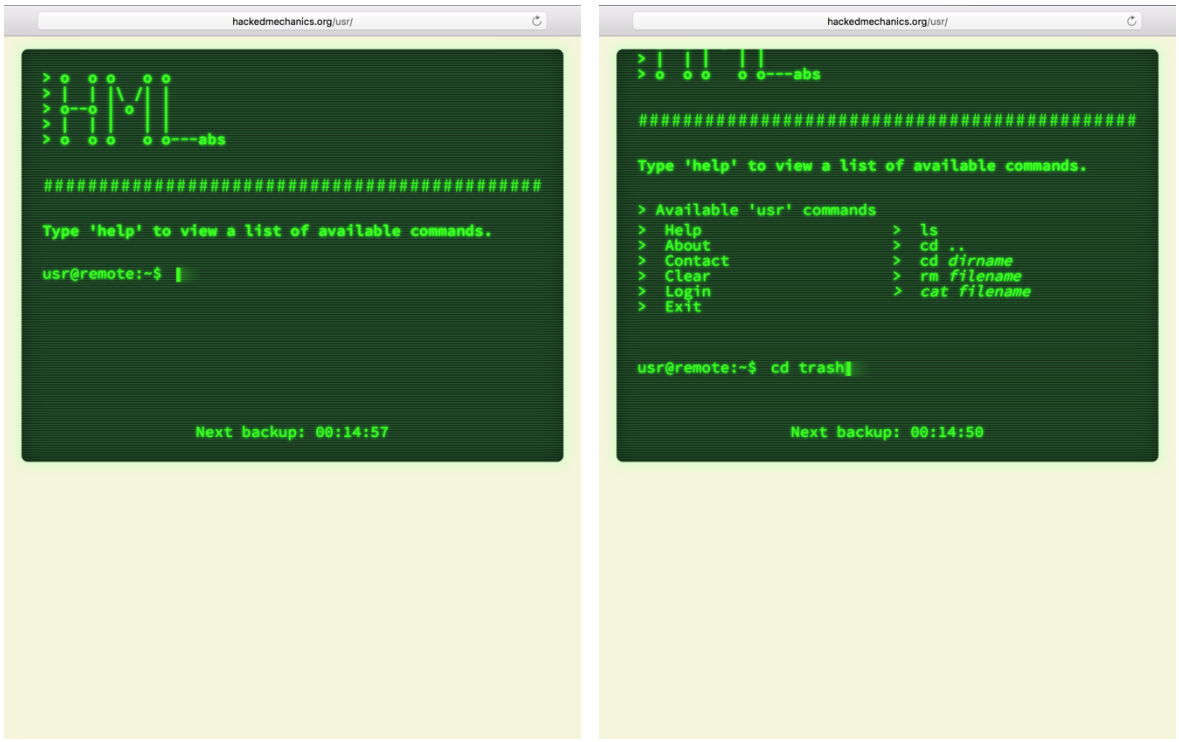


Figure 20. *Prototype 2* gameplay screens

During the course of play, players must find and read deleted emails, access and delete files, and, finally, exit the system before being logged. Along the way, a *help* screen that contains all of the required commands is always accessible.

One of the key challenges that the game presents is logging into the system to gain *root* access. Once the player has perused much of the *user* level files and directories, they should possess all of the information required to login.

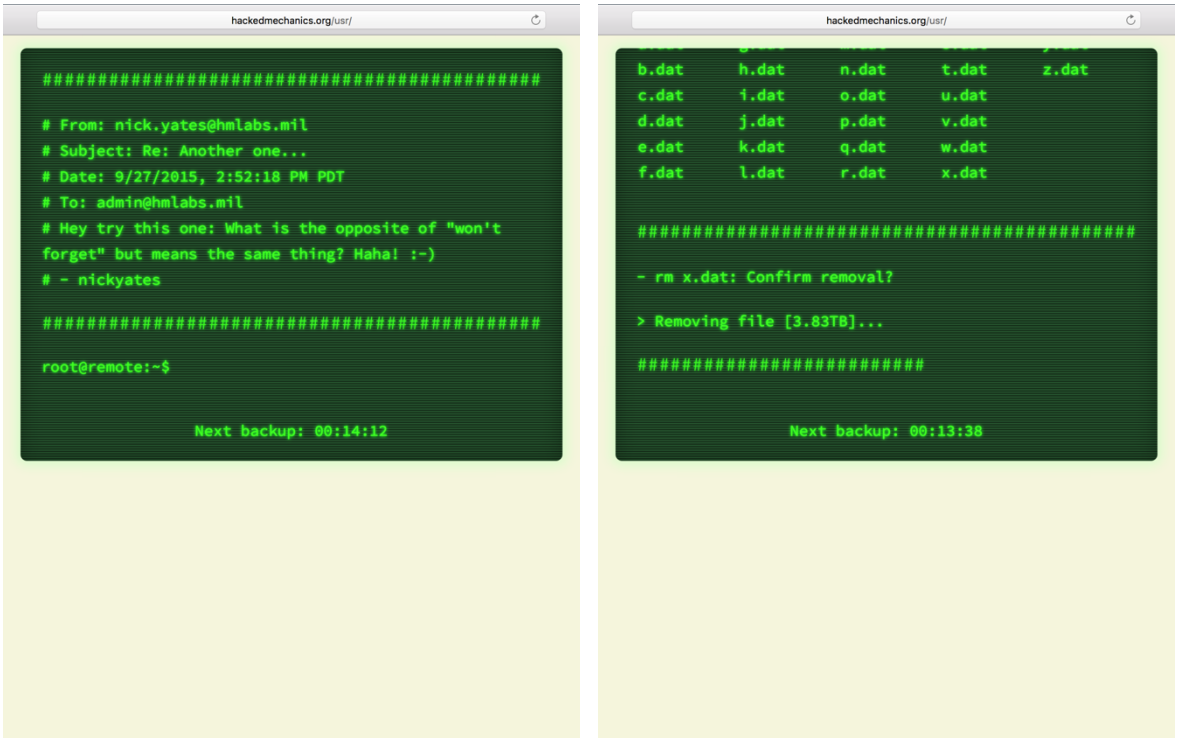


Figure 21. *Prototype 2* gameplay screens

Once logged-in, players must find and delete an encrypted file that will bring down the system (see Figure 21). This is the *win* state of the game. If the player runs out of time, or fails to exit the system before the timer expires, they will lose.

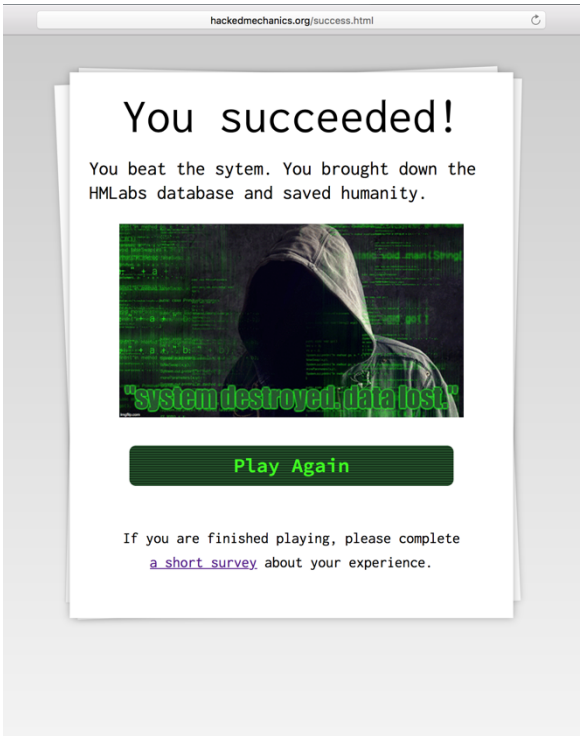


Figure 22. *Prototype 2 success* screen

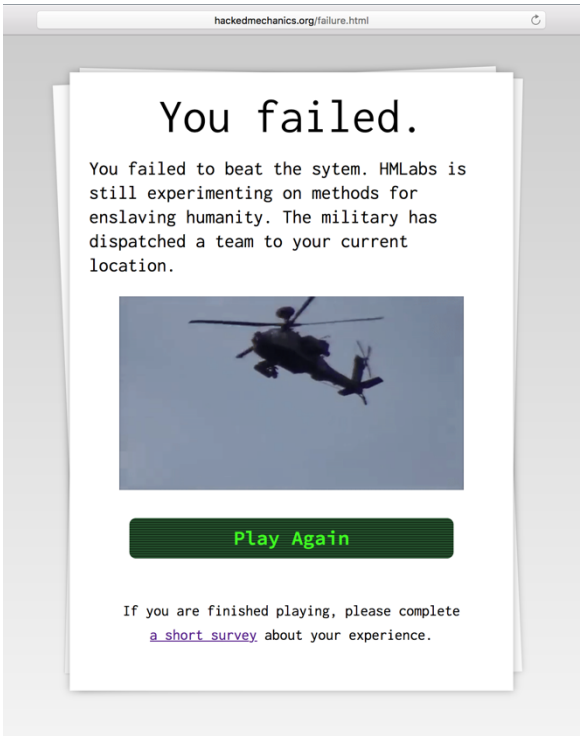


Figure 23. *Prototype 2 failure* screen

Figures 22 – 23. *Prototype 2 consequence* screens

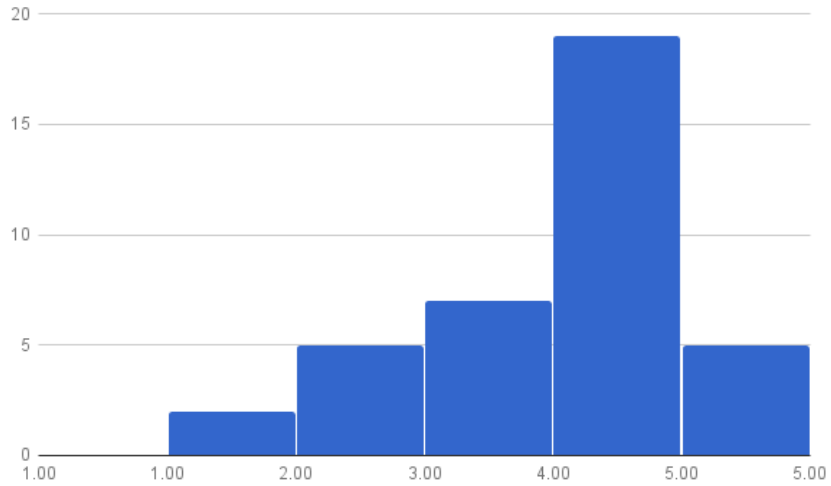
Each consequence leads to a final screen that explains the results of their actions and allows them try again (see Figures 22 – 23).

Prototype 2: Playtest Results

Prototype 2 amassed 38 respondents ranging from 11- to 48-years of age, primarily male, and 84.2% of which had played IF games prior to this playtest. Of the group who had played IF games before, more than half of them stated that they had previously encountered time-limited gameplay in IF, 12.5% reporting that they may have played IF games containing time-limited systems or mechanics. The general approval (average to high) of time-limited systems or mechanics in IF came in at 60%.

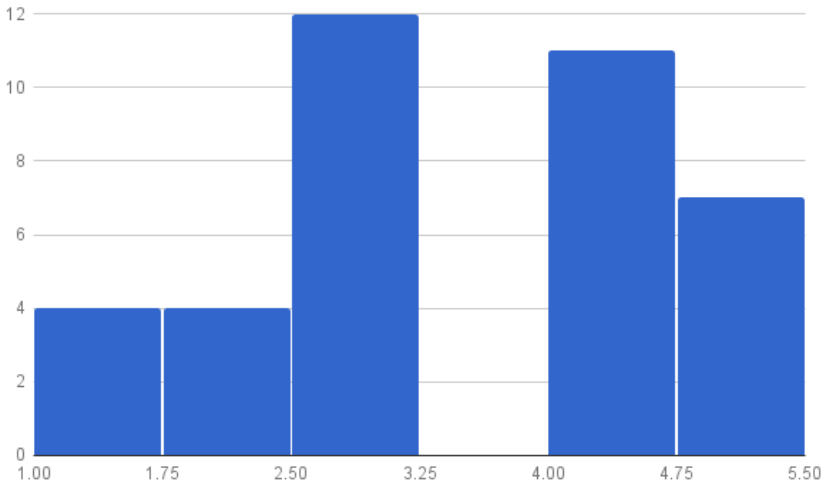
Similar to the playtest results for *Prototype 1*, the ensuing playtest results for *Prototype 2* concern the players' general enjoyment of the system, their level of emotional engagement, and the immediacy felt while playing the game.

Table 9. Rate your general enjoyment while playing the time-limited system.



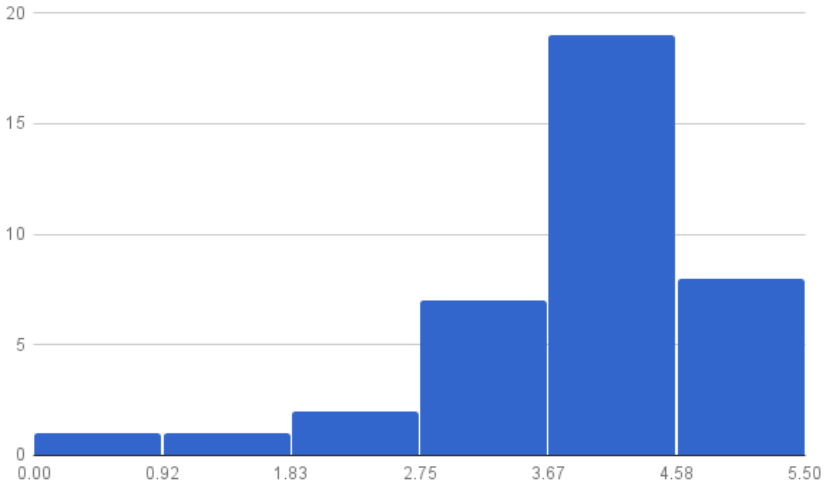
While some test subjects did not find the time-limited system within *Prototype 2* enjoyable, the majority, at 81.6%, rate the experience as above average.

Table 10. Rate the amount of emotional engagement that you felt while playing the time-limited system.



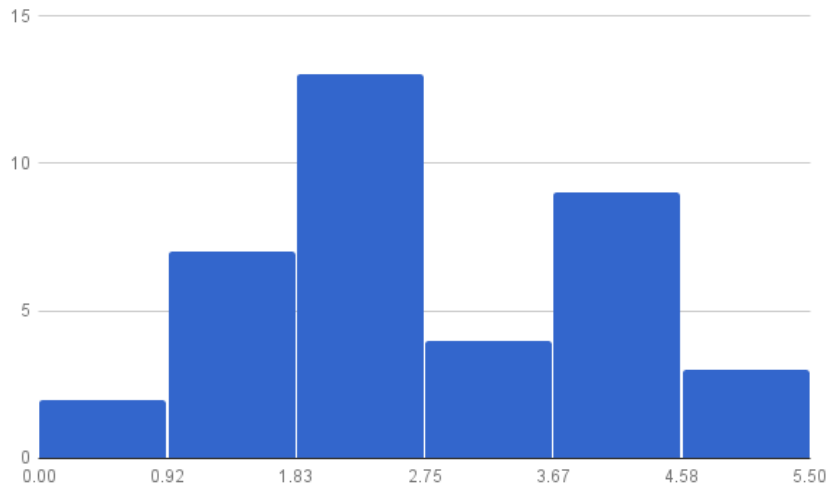
The question of *emotional engagement* presented the most polarizing results of the *Prototype 2* survey. Here, there was nearly a fifty-fifty split between whether the time-limited system produced a greater emotional engagement or not. Regarding this test result, the emotional engagement felt by players was slightly higher than average.

Table 11. Rate the amount of immediacy that you felt while playing the time-limited system.



Conversely to the *emotional engagement* aspect of the time-limited system, most of the test subjects — 89.5% — reported a heightened amount of immediacy felt while playing this prototype.

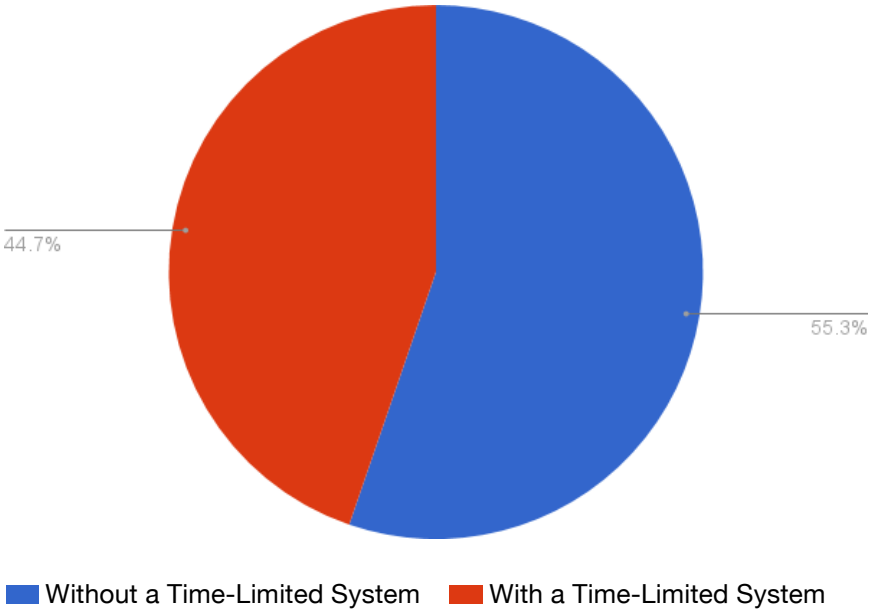
Table 12. When playing the time-limited system, did you feel a sense of frustration or fun?



Similar to *Prototype 1*, the question, "When playing the time-limited system, did you feel a sense of frustration or fun?" was asked. Here, the results were spread across the board, although most test subjects reported a feeling of frustration with the system. Although, in this case, a few test subjects were quick to point out the benefits of a *frustrating* system. One of the playtesters had this to contribute:

> *...hard to answer frustration vs. fun question — the two are deeply intertwined in this context. The fun for me comes from defeating the frustrating aspects. (Time-Limited System Playtest Feedback)*

Table 13. When playing Interactive Fiction games, would you rather play with or without a time-limited system?



Finally, the playtest concluded by asking the test subjects if they would rather play an IF game with or without a time-limited system. In this case, a slight majority chose the *without* option, although the results are fairly evenly divided.

In the end, most of the playtesters provided encouraging comments about the time-limited system. Interestingly, a common response from those who would rather not be placed under a persistent time-limit was not that the time-limited system was bad, per se, but that it might be more effective if broken into smaller chunks, providing opportunities for more progressive puzzle completion along the way.

CONCLUSION

Will the inclusion of real-time mechanics increase emotional engagement and immediacy in Interactive Fiction? Yes. Without a doubt. Is the inclusion of real-time mechanics in Interactive Fiction imperative? The studies presented here resulted in data that must still be debated. According to many of the experts quoted throughout this paper, the aspect of real-time gameplay is an important factor in interactive entertainment. And IF, as a whole, is just that.

Regardless of player preferences — that is, which exact style of IF works better than any other for particular player types — the playtest results have determined that real-time mechanics, when positioned in IF games, can evoke greater emotional engagement and immediacy than in traditional IF fare. While this study wasn't intended to determine how IF games might become more immersive, or even to give players the illusion that they were more in control of their in-game existences, it can be said that emotional engagement and immediacy of gameplay can lead to a deeper sense of immersion and the suspension of disbelief.

Equipped with this knowledge, game designers must now consider the task of determining how to include such mechanics in their games. Whether to make the entirety of an IF game real-time in some way, create segments of a game that delve into self-contained real-time aspects, or to combine the IF aesthetic into other game genres, the options are limitless.

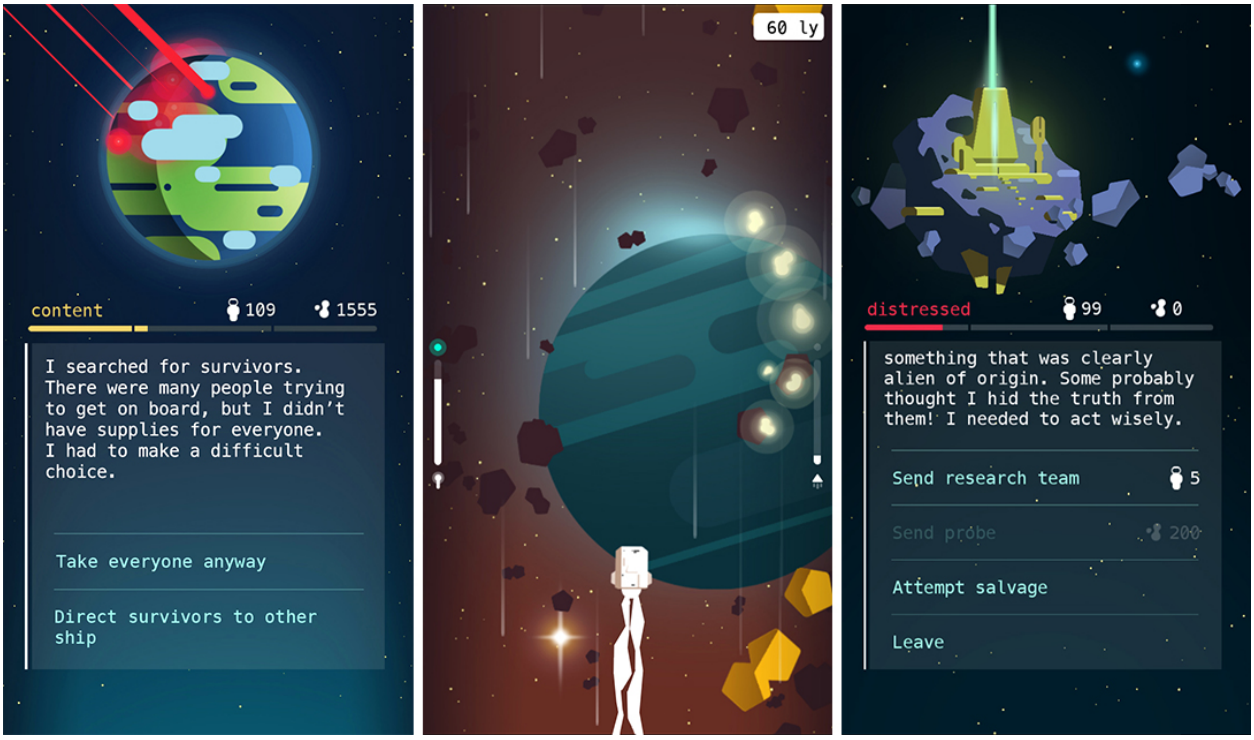


Figure 24. *Full of Stars* "mixed" gameplay (ArsThanea)

One such game that exemplifies the convergence of real-time gameplay with IF is the 2017 release, *Full of Stars*, by ArsThanea, a game that combines IF-style interludes between action-packed arcade-style gameplay (see Figure 24). The IF portions of *Full of Stars* (while delivered in a traditional non-real-time manner) when compounded with the real-time play within the rest of the game delivers a startling amount of emotional engagement and sense of immediacy for an otherwise simple game.

Suggestions for Further Research

Although this particular study's findings are intriguing and point to new ways that Interactive Fiction could evolve into forms that have yet to be realized, there are still a variety of tests that might be conducted for related issues within IF games. For instance, the addition of device-specific native notifications and other *disruptive* techniques might present interesting results: quite possibly they could further increase the player's emotional engagement and sense of immediacy during play, or they could merely become an annoyance — or something worse — that gets in the way of *normal* life: an increase in player stress levels, emotional and mental preoccupation, negligence of responsibilities, and even lawsuits from events such as traffic accidents, et cetera. (Of course, these are issues that potentially exist within most videogame genres.) This being said, the ethical nature of real-time IF — especially if the real time is persistent — is something that bears further consideration. Likewise, tests of different game types, different game-playing populations, and so on, would be exciting. Ultimately, game designers and developers (both for IF and otherwise) now have comprehensive evidence that real-time systems and mechanics can increase the potential for the genre.

APPENDIX

APPENDIX A.

Prototype 1 Raw Survey Results

Table 14. Prototype 1 Questions & Answers (Raw Data)

Have you ever played an Interactive Fiction (text adventure) game before?	When playing Interactive Fiction games, have you ever encountered a combat system?	What is your overall opinion of combat systems in Interactive Fiction games?
Yes	Yes	3
Yes	Yes	3
Yes	Yes	1
Yes	Yes	5
Yes	No	
Yes	No	
Yes	No	
Yes	Yes	4
No		
Yes	Yes	3
No		
No		
Yes	Yes	4
Yes	No	
Yes	Maybe	
Yes	No	
Yes	Yes	1
Yes	No	
No		
Yes	No	
Yes	Yes	4
Yes	Yes	3
Yes	Maybe	
Yes	Yes	4
Yes	No	

Yes	No	
Yes	Yes	4
Yes	Yes	3
No		
Yes	Yes	2
Yes	No	
Yes	Yes	2
Yes	Yes	2

Rate your general enjoyment while playing the turn-based combat system.	**Rate your general enjoyment while playing the real-time combat system.**
2	3
2	4
1	0
2	3
3	3
4	2
1	3
3	5
2	1
3	4
1	1
2	1
4	0
3	4
3	3
2	4
2	3
3	4
5	3
1	3
5	5
1	4
2	0

2	5
2	4
3	2
3	3
4	1
3	4
2	1
4	2
1	4
2	2
2	3

Rate the amount of emotional engagement that you felt while playing the turn-based combat system.	**Rate the amount of emotional engagement that you felt while playing the real-time combat system.**
0	2
2	4
1	1
1	4
3	4
5	1
2	4
3	3
0	0
3	5
0	0
2	2
4	2
1	4
4	3
2	4
1	4
4	3
5	2
2	4

3	3
3	4
0	1
2	5
1	2
2	1
3	4
3	4
2	4
3	2
2	5
3	3
3	2

Rate the amount of immediacy that you felt while playing the turn-based combat system.	**Rate the amount of immediacy that you felt while playing the real-time combat system.**
0	2
1	4
2	4
0	5
2	5
0	5
1	4
3	5
0	4
2	5
1	4
2	2
5	0
1	5
3	4
1	4
1	4
2	5

4	1
0	5
3	3
2	4
0	5
2	5
1	4
2	4
3	4
0	5
1	5
1	3
1	5
1	3
1	3

When playing the turn-based combat system, did you feel a sense of frustration or fun?	**When playing the real-time combat system, did you feel a sense of frustration or fun?**
3	2
2	3
1	0
2	3
3	4
1	3
2	3
3	5
3	3
3	4
3	2
3	0
3	0
3	3
2	3
2	4

2	2
1	3
4	3
1	4
4	4
1	4
2	0
1	5
1	3
3	2
3	4
4	1
2	5
4	0
2	1
4	4
1	3

If an Interactive Fiction game contained a combat system, which one would you prefer?
Turn-based
Turn-based
Turn-based
Real-time
Real-time
Turn-based
Real-time
Real-time
Real-time
Real-time
Turn-based
Turn-based
Real-time
Real-time
Turn-based

Real-time
Real-time
Turn-based
Turn-based
Real-time
Real-time
Real-time
Turn-based
Real-time
Real-time
Turn-based
Turn-based
Turn-based
Real-time
Turn-based
Turn-based
Turn-based
Real-time

APPENDIX B.

Prototype 2 Raw Survey Results

Table 15. Prototype 2 Questions & Answers (Raw Data)

Rate your general enjoyment while playing the time-limited system.	Rate the amount of emotional engagement that you felt while playing the time-limited system.	Rate the amount of immediacy that you felt while playing the time-limited system.
4	4	5
3	1	2
4	3	4
4	5	4
4	5	5
4	4	2
1	1	4
4	3	3
5	4	4
4	4	5
3	3	4
4	4	4
5	3	4
4	3	4
2	4	3
2	1	0
1	2	4
5	4	4
2	2	4
4	3	4
5	4	5
3	3	1
2	3	3
3	3	4

4	3	5
4	5	4
3	2	3
4	5	5
2	1	3
4	4	4
4	5	5
4	5	4
3	2	4
4	4	4
5	5	5
4	4	4
3	3	3
4	3	3

When playing the time-limited system, did you feel a sense of frustration or fun?	**When playing Interactive Fiction games, would you rather play with or without a time-limited system?**
2	Without a time-limited system
1	With a time-limited system
3	Without a time-limited system
2	Without a time-limited system
2	Without a time-limited system
2	Without a time-limited system
1	With a time-limited system
4	With a time-limited system
5	With a time-limited system
4	With a time-limited system
2	With a time-limited system
2	Without a time-limited system
4	With a time-limited system
2	With a time-limited system
1	With a time-limited system
2	Without a time-limited system
1	Without a time-limited system

4	Without a time-limited system
0	With a time-limited system
5	With a time-limited system
2	Without a time-limited system
4	With a time-limited system
0	With a time-limited system
1	With a time-limited system
4	With a time-limited system
3	Without a time-limited system
4	With a time-limited system
5	Without a time-limited system
1	Without a time-limited system
2	With a time-limited system
2	Without a time-limited system
2	Without a time-limited system
2	Without a time-limited system
3	Without a time-limited system
4	Without a time-limited system
3	Without a time-limited system
1	Without a time-limited system
4	Without a time-limited system

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